UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

March 6, 2009

MEMORANDUM:

Subject: EPA Reg. No.: 49538-2/Phyton 27
DP Barcode: 362347
Case No.: 0649

From: Marianne Lewis, Biologist
Product Reregistration Branch
Special Review and Reregistration Division (7508C)

Marianne Lewis 3/6/09

To: Veronica Dutch, CRM
Product Reregistration Branch
Special Review and Reregistration Division (7508C)

Applicant: Phyton Corp.
5608 International Parkway
New Hope, MN 55428

FORMULATION FROM EPA Reg. No. 49538-2 LABEL:

	% by wt.
Active Ingredient(s):	
Copper Sulphate Pentahydrate	21.36%
Inert Ingredient(s):	78.64%
Total	100.00%

BACKGROUND: In the 8 month response to the Copper RED, the registrant has submitted acute toxicity studies to support the reregistration of their product, EPA Reg. No. 49538-2. The MRID's are as follows: 476773-03 (81-1), 476773-04 (81-3), 476773-05 (81-5), 476773-06 (81-6). The studies were conducted by Product Safety Labs. The test material used in each of the studies was the subject product. The registrant has indicated that the remaining two studies (81-2 & 81-4) are still underway and will be submitted to the Agency shortly.

RECOMMENDATIONS:

- The acute toxicity studies submitted are acceptable to support the reregistration of EPA Reg. No. 49538-2.

The acute toxicity profile for EPA Reg. No. 49538-2 is currently:

Acute Oral	III	Acceptable
Acute Dermal		Data Needed
Acute Inhalation	IV	Acceptable
Primary Eye		Data Needed
Primary Dermal	II	Acceptable
Skin Sensitization	non sensitizer	Acceptable

NOTE: The labeling will be completed upon receipt of the required information.

DATA REVIEW FOR ACUTE ORAL TOXICITY (§81-1, 870.1100)

Product Manager: Tony Kish, 22
MRID No.: 476773-03

Reviewer: Marianne Lewis
Study Completion Date: 6/24/08
Report No.: 24654

Testing Facility: Product Safety Labs
Author: G. Moore

Quality Assurance (40 CFR §160.12): Included

Test Material: Phyton 27, green/brown liquid

Species: Sprague-Dawley derived albino rat
Age: young adult
Weight: females = 172 – 214 g
Source: Ace Animals, Inc.

Conclusion: Up & Down Method

1. **LD_{50} (mg/kg):** 3110 mg/kg (1750 – 5000 mg/kg)

2. **Toxicity Category:** III **Classification:** Acceptable

Procedure (Deviations from §81-1): none

Results: Limit Study

Test Sequence	Animal Id	Dose Level (mg/kg)	Short term outcome	Long term outcome
1	3101	5000	S	S
2	3102	5000	D	D
3	3103	5000	D	D
4	3104	5000	D	D

S = survival; D = death

Main Study

Test Sequence	Animal Id	Dose Level (mg/kg)	Short term outcome	Long term outcome
5	3105	175	S	S
6	3106	550	S	S
7	3107	1750	S	S
8	3108	5000	D	D
9	3109	1750	S	S
10	3110	5000	D	D
11	3111	1750	S	S
12	3112	5000	D	D

S = survival; D = death

Observations:

Dose mg/kg	Time of Death	Clinical Observations
175	N/A	Active and healthy
550	N/A	Active and healthy
1750	N/A	Active and healthy
5000	2/7 at 3 hrs. 1/7 at 5 hrs. 3/7 on day 1	Ano-genital staining, soft feces, hypoactivity, hunched posture, piloerection

Gross Necropsy:

Dose mg/kg	Gross Necropsy Observations
175	No observable abnormalities noted
550	No observable abnormalities noted
1750	No observable abnormalities noted
5000	Survivor: no observable abnormalities noted; decedents; red intestines

DATA REVIEW FOR ACUTE INHALATION TOXICITY TESTING (§81-3, 870.1300)

Product Manager: Tony Kish, 22
MRID No.: 476773-04

Reviewer: Marianne Lewis
Study Completion Date: 6/24/08
Report No.: 24655

Testing Facility: Product Safety Labs
Author: G. Moore

Quality Assurance (40 CFR §160.12): Included

Test Material: Phyton 27, green/brown liquid

Species: Sprague-Dawley derived albino rat
Weight: males = 245 - 263 g; females = 200 - 222 g
Age: young adult
Source: Ace Animals, Inc.

Summary:

1. **LC_{50} (mg/L):** > 2.07 mg/L

2. **MMAD:** 2.7 µm **GSD:** 1.96

3. **Tox. Category:** IV **Classification:** Acceptable

Procedure (Deviation From §81-3): none

Results: **Reported Mortality**

Exposure Concentration	(number deaths/number tested)		
	Males	Females	combined
2.04 mg/L	0/6	0/6	0/12

Chamber Atmosphere		
Dose Level mg/L	MMAD	GSD
2.04	2.7 µm	1.96
	2.7 µm	1.93

Chamber Environment	Dose Level mg/L
	2.07
Chamber Volume	6.7 L
Airflow	25.6 – 25.8 Lpm
Temperature (˚C)	21 – 22
Relative Humidity %	51 - 53

Clinical Observations: All gained weight and appeared active and healthy during the course of the study.

Gross Necropsy Findings: No observable abnormalities noted.

DATA REVIEW FOR SKIN IRRITATION TESTING (§81-5, 870.2500)

Product Manager: Tony Kish, 22
MRID No.: 476773-05

Reviewer: Marianne Lewis
Study Completion Date: 6/24/08
Report No.: 24656

Testing Facility: Product Safety Labs
Author: G. Moore

Quality Assurance (40 CFR §160.12): Included

Test Material: Phyton 27, green/brown liquid

Dosage: 0.5 mL
Species: New Zealand albino rabbit
Age: young adult
Sex: 3 females
Weight: not given
Source: Robinson Services, Inc.

Summary:

1. **Toxicity Category:** II **PII** = 2.6

2. **Classification:** Acceptable

Procedure (Deviations From §81-5): none

Results: Twenty four hours prior to application of the test material the dorsal area and trunks were clipped free of hair. The test material was applied neat to the intact test site (6 cm^2). The test sites were covered with a 1 x 1 inch, 4-ply gauze pad. The pads and trunks were then wrapped with 3 inch Micropore tape. After 4 hours the pads and wrappings were removed and the test sites were cleansed.

At 1 hr., 1/3 well defined erythema, 2/3 very slight erythema, 3/3 very slight edema, & 3/3 greenish/yellow staining at test site. From 24 hours through 72 hours, 1/3 severe erythema to slight eschar formation w/large black area in test site and slight edema, 2/3 very slight erythema, 3/3 greenish/yellow staining at test site. On day 7, 1/3 severe erythema to slight eschar formation w/superficial eschar and slight edema, 1/3 very slight erythema, 3/3 greenish/yellow staining at test site. On day 10, 1/3 severe erythema to slight eschar formation w/superficial eschar and slight edema & 3/3 greenish/yellow staining at test site. By day 14, 1/3 very slight erythema and very slight edema & /3 greenish/yellow staining at test site.

DATA REVIEW FOR DERMAL SENSITIZATION TESTING (§81-6, 870.2600)

Product Manager: Tony Kish, 22
MRID No.: 476773-06

Reviewer: Marianne Lewis
Study Completion Date: 5/29/08
Report No.: 24657

Testing Facility: Product Safety Labs
Author: G. Moore

Quality Assurance (40 CFR §160.12): Included

Test Material: Phyton 27, green/brown liquid

Positive Control Material: HCA historical control (PSL # 22930, 10/10/07)

Species: Hartley albino guinea pig
Weight: females = 326 – 396 g
Age: young adult
Source: Elm Hill Breeding Labs

Method: Buehler

Summary:

1. **This Product is a** non sensitizer

2. **Classification:** Acceptable

Procedure (Deviation From §81-6): none

Procedure:

A group of animals were used to determine the highest non-irritating concentration (HNIC) of the test substance prior to the challenge dose. The HNIC for the test substance was determined to be 1% w/w mixture in distilled water.

The test animals were induced with 0.4 mL of 100% test material once a week for three weeks using a Hill Top Chamber. Twenty four and 48 hours after each induction dose the animals were scored for irritation. Two weeks after the last induction dose, 0.4 mL of 1% w/w of test material in distilled water was used to challenge the test animals. Twenty four and 48 hours after the challenge the animals were evaluated for sensitization.

A group of ten animals were used as naive controls. These animals received only the challenge doses of the test material.

Results:
Twenty four hours after the first induction dose for the test material-induced animals, 2/20 exhibited very faint erythema & 18/20 faint erythema. After the second induction dose, 3/20 exhibited very faint erythema & 17/20 faint erythema. After the third induction dose, 12/20 exhibited very faint erythema and 8/20 faint erythema at the test site.

Twenty four hours after challenge, 2/20 test material-induced animals exhibited very faint erythema.

At 24 hours, in the naive control group of animals challenged with the test material, 1/10 exhibited very faint erythema.